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Adapted Shared Reading: A Study of its Effectiveness in Inclusive Preschool Classrooms

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Adapted shared storybook reading has been demonstrated to be effective at increasing both engagement and comprehension during shared storybook reading for elementary-aged students with exceptional needs. Research on these methods has primarily been conducted with students in self-contained elementary classrooms and has lacked evidence of generalization to new texts. This study examined the use of the adapted shared reading program in inclusive early childhood classrooms. Using a multiple baseline across participants design, the program was shown to be effective at increasing engagement, listening comprehension, and communication during shared reading interactions. These skills were generalized to novel adapted texts. Teachers' perceptions of the reading program were explored. Pre- and post-intervention interviews suggest that the teachers found the goals, procedures, and outcomes of the reading program generally appropriate for preschool students.

Keywords: Literacy, adapted shared reading, universal design for learning, early literacy, early communication

Shared storybook reading is a hallmark early childhood literacy practice that involves an adult, or other expert reader, reading a story to one or more children (Browder et al., 2009; Hudson & Test, 2011; National Early Literacy Panel, 2008). Despite the research base about the impact of interactive shared reading on both oral language and early literacy development (Lennox, 2013; Schickedanz & McGee, 2010), relatively little work has examined its value for young children with disabilities (CWD; Hudson & Test, 2011).

Hudson and Test (2011), however, were able to identify a moderate level of support for using shared reading to address language and literacy development in children with significant levels of impairment. One of the lines of research included in their review, conducted by Browder and her colleagues (Browder, Mims, Spooner, Ahlgrim-Delzell, & Lee, 2008; Browder, Lee, & Mims, 2011; Mims, Browder, Baker, Lee, & Spooner, 2009), was ultimately published by the Attainment Company as a story-based reading program

for early symbol users, *Pathways to Literacy* (Lee, Mims, & Browder, 2011).

Designed to meet the needs of children who “do not yet consistently use words, pictures, or other symbols to communicate” (Lee et al., 2011, p. 7 of the Implementation Guide), children need not demonstrate prerequisite skills to participate in the program. Instead, the learners’ needs are met through a combination of systematic instruction and universal design for learning (UDL; CAST, 2018). UDL involves the integration of multiple modes of engagement, representation, and action and expression in a lesson, allowing instruction to be accessible to a wide range of users. In the *Pathways to Literacy* curriculum, UDL is evident through guidelines and planning guides for adapting the reading interaction for students who use different modes of responding, including eye gaze, touch, and object response and those who need additional motivation for engagement.

Despite the promising body of research that led to the development of *Pathways to Literacy*, there are limitations in the research base that indicate a need for continued exploration of the procedures used in the reading program. For example, while shared reading is an important activity for preschool-aged children, the participants in the *Pathways to Literacy* studies were elementary-aged, ranging in age from 6 to 10 years (Browder et al., 2008; Browder et al., 2011; Mims et al., 2009). As the National Association for the Education of Young Children (NAEYC; 2009) cautions, it is risky to assume that instructional methods used with older students are appropriate and effective for preschoolers. Lacking an evidence base for shared reading instruction for preschoolers with exceptional learning needs leaves early

childhood special educators in the precarious position of either overlooking this important component of early language and literacy instruction or introducing developmentally inappropriate instructional methods that are incongruous with existing preschool practices.

Another major consideration is the issue of generalization. Much of the research on adapted shared reading practices has not included a generalization phase (Hudson & Test, 2011). When Muchetti (2013) examined the impact of the procedures described in the Browder et al. (2008) study with four 6- to 8-year-old students with autism, none of the participants transferred their skills to novel non-adapted books. However, the conceptualization of generalization in this study was problematic as the features of the lesson that made it universally designed and, thus, accessible to the students were removed. More recently, Kim, Rispoli, Lory, Gregori, and Brodhead (2018) examined the maintenance of the effect of a dynamic story-telling intervention for elementary-aged students with ASD by asking the students to read new adapted chapters from previously taught texts. The students demonstrated maintenance of reading comprehension and task engagement, suggesting that they were able use supports provided to comprehend new texts. Generalization to completely novel texts has not been examined.

A final consideration is the context in which instruction was implemented in the original studies. The preliminary investigations for *Pathways to Literacy* were implemented in self-contained special education classrooms. This practice is problematic as it may serve to reinforce the cultural assumption that these students are incapable of participating in grade-level

instruction (Baglieri, Bejoian, Broderick, Conner, & Valle, 2011). While there are practical considerations that lead to research in self-contained classrooms (not the least of which is the prevalence of this model of service provision for children with significant impairments [Kurth, Morningstar, & Kozleski, 2014]), one cannot assume that the instructional techniques used in these programs would be found to be acceptable or appropriate in inclusive settings.

To address these gaps in the literature, the current study replicated and extended the studies investigating the adapted shared reading program published as *Pathways to Literacy* (Browder et al., 2008; Browder et al., 2011; Lee et al., 2011; Mims et al., 2009). To address the questions of whether the adapted shared reading program increased engagement, listening comprehension, and communication in shared reading for young children, the reading program was implemented with three CWD enrolled in inclusive early childhood (EC) classrooms. Novel adapted books were introduced in the final phase of the study to examine the generalizability of the results. Finally, to address concerns about the social validity of the program in inclusive EC classrooms, the special education teachers implementing the program were interviewed for feedback on their impressions of the program, challenges they faced with implementing it, and recommendations for modifications to the program.

Method

Participants

Special education teachers. Special education teachers (SETs) who were eligible for this study worked with students enrolled in a program in which the majority of students were not eligible for an

individualized education program (IEP), but at least one of the students enrolled in their programs had to meet the eligibility criteria. Jamie held an Education Specialist Credential in moderate to severe disabilities and taught in a private preschool classroom located in an urban area in Northern California. Geri, who held a Specialist Instruction Credential in Special Education to serve students with visual impairment and a Child Development Site Supervisor Permit, was employed through a county office of education (COE) located in a suburban area in Northern California. Her program employed an itinerant model, with Geri moving between Head Start classrooms to support the general education staff to serve the students on her caseload.

Children with disabilities. CWD were eligible if they: (a) were at least four years old and (b) were eligible for an IEP. Based on the requirements for students to participate in Level 3 of the *Pathways to Literacy* reading program, they also must have (a) demonstrated fewer than 25% of spontaneous independent initiations on the task analysis (TA) for adapted shared reading (Figure 1) when reading non-adapted storybooks; (b) demonstrated inconsistent use of spoken language and/or poor comprehension skills based on teacher report; and (c) demonstrated an emerging understanding that pictures and objects have meaning, either through use of augmentative or alternative communication (AAC) systems, the ability to match pictures to objects, or the ability to follow a picture schedule.

Mora was a 4 year, 3 month old Japanese-American girl enrolled in Jamie's class. She was diagnosed with familial exudative vitreo-retinopathy (FEVR; visual acuity 20/200). Additionally, over the

course of the study, she was diagnosed with autism. In addition to participation in the classroom, she received several services at school (vision services, vision therapy, and orientation and mobility) and home (speech and occupational therapy). Mora was exposed to both Japanese and English at home, while all instruction in the classroom was conducted in English. Although her spoken language was limited, she began to produce a mix of Japanese and English one-to two-word utterances shortly before the beginning of the study, which had resulted in the discontinuation of instruction on the use of a voice output device. At screening, she was able to complete two of the 23 steps of the TA independently. Jamie reported that Mora frequently chose to interact with books during free play, but she

insisted on manipulating the books herself. Her teachers had attempted to use a variety of object- and picture-based systems for communication and instruction with limited success. In addition to her limited speech production and listening comprehension, Mora exhibited a variety of behaviors that inhibited her ability to participate in shared reading. When agitated or upset, she would yell, jump out of her seat, and hit herself. If allowed to escalate, she would bite herself. These behaviors had interrupted previous attempts to engage in shared reading. Throughout the study, any instance of self-injurious behavior resulted in the immediate termination of the session. This only occurred during baseline sessions.

Step	Example Student Responses	Dependent Variable
1. Choose book to read	Touches one book, reaches toward one book, or says book name	Engagement
2. Places own name/photo with the book choice or indicates where the name/photo goes	Drop photo onto the book	Engagement
3. Attends to the title and author as they are read	Touch the title	Engagement
4. Attends to the anticipatory set and engages with a story-related object	Look at, touch, lean toward, or turn head towards object	Engagement
5. Makes a prediction when asked, "What do you think this story is about?" and shown three objects	Touches one object related to the book	Listening comprehension and communication
6. Attends as book is opened	Grasps edge of front cover, opens. Considered correct even if several pages are opened at the same time.	Engagement

7. Attends to the introduction of the repeated storyline by participating in completing the sentence	Completes the storyline by providing the final word and/or activating the AAC device	Listening comprehension and communication
8. – 10. Participates in reading by completing repeated story line using a switch or spoken words	Says line within 2 seconds of reading of first half of line	Listening comprehension and communication
11. – 13. Locates the symbol placed on or near the storyline on the page (embedded picture)	Gives, points to, or pulls off the symbol	Listening comprehension and communication
14. – 16. When shown an object related to the text, locates the object on the page to “read” with teacher	Touch object or pull object off book	Listening comprehension and communication
17. – 19. Selects object to answer comprehension questions about text.	Touch object or pick object up	Listening comprehension and communication
20. – 22. Independently turn page, imitate a page turn, or request a page turn when provided opportunity	Grasps edge of page and lifts it up. Correct even if several pages turned at once.	Engagement
23. When asked what the story was about, select the object that goes with the book (using same distractors from step 5)	Touches one object related to the book	Listening comprehension and communication

Figure 1. Task analysis for student engagement in shared storybook reading

Angela was a 4 year, 4 month old Mexican-American girl enrolled in Geri's program for visual impairments and speech language impairment. She was diagnosed with optic nerve atrophy and had zero light acuity. In addition to participation in the classroom, she received vision services, orientation and mobility, and speech, occupational, and physical therapies in the school. Her first language, Spanish, was spoken exclusively in her home. While classroom instruction was primarily in English, one bilingual paraprofessional could translate for Angela and other

students as needed. Angela's language was primarily a mix of Spanish and English utterances, typically in the form of echolalia or scripted utterances. For example, throughout each session, she would frequently echo Geri's language or would repeatedly ask “¿qué es eso, Geri?” (“what's that, Geri?”) and would persist to ask this question despite Geri's response. At screening, Angela was able to complete three of the 23 steps in the TA independently. Before the onset of the study, Angela had demonstrated an inconsistent understanding that symbols

had meaning. While her teachers used physical objects to support comprehension throughout the day, these had not been successful in increasing her participation and engagement in activities. She could, however, label the objects when asked. Angela never chose to interact with books and appeared unengaged when books were read during large group activities.

Adam, a 5 year, 2 month old Caucasian boy enrolled in Jamie's classroom, was eligible for special education services due to a diagnosis of autism. He received specialized academic instruction at school and speech, occupational, and Floortime therapies at home. He was exclusively exposed to English in school and at home, and his language was characterized by repetitive utterances spoken primarily to himself. At screening, he was able to complete five of the 23 steps of the TA independently. While in his specialized instruction sessions Adam had mastered the ability to match pictures to objects and had begun letter identification, he had yet to demonstrate listening comprehension. He appeared to enjoy interacting with books but engaged in idiosyncratic patterns of behaviors with books and was easily distracted when teachers read with him. He would jump out of his seat, roll on the floor, or attempt to find toys to play with.

Peer selection. Each reading session included one student with disabilities and a peer. All peers included in this study were preschoolers between 4- and 6-years-old. Peer selection differed across classrooms. Jamie's classroom emphasized child choice of peers during activities, so Mora and Adam chose their peer for each reading session. Mora chose her partner from a selection of two pictures while Adam either gestured to or verbally named a peer. Geri

opted to create a list of potential peer partners by asking for volunteers during circle time before the first study session. Six students volunteered. A peer from this was asked to join each shared reading lesson. If the child was absent or requested not to participate that day, the next child on the list was recruited to join the reading group.

Setting

Jamie's classroom used a co-teaching model to serve 20 students, six of whom were eligible for IEPs for a range of needs, including speech language impairment, autism, and visual impairment (VI). Geri's classroom enrolled 17 preschoolers, two of whom were eligible for an IEP for VI. Both programs employed a play-based curriculum. Both SETs chose to conduct the reading sessions during "free choice" time. Jamie opted to use the "cubby area," a space near the entrance to the room separated from the play area by a swinging gate. Mora and Adam's reading sessions took place on the floor. A small, raised tray was placed between Jamie and the student and his or her peer. Materials used in the reading sessions were placed on the tray as needed. Initially, Geri chose to conduct Angela's sessions in the classroom "writing area." Angela and her peer sat in two chairs at the table, with Geri between them as she read the books; the related materials placed on the desk. Because the writing center was located near the "sensory area," which was a noisy hot-spot in the classroom, the setting was changed after five sessions. The remainder of Angela's sessions took place in the "library area," a nook surrounded by bookshelves. During reading sessions, a table was placed in the center of the library area and a partition was used to block the noise from the sensory area. Angela and the peer sat

in chairs on one side of the table while Geri sat on the other.

Intervention package

The *Pathways to Literacy* adapted shared reading program includes an implementation guide, three adapted storybooks, teacher guides with scripted lessons, story-related objects, card sets, a Big Button voice output device, a symbol creation kit, and data sheets. Adapted books were laminated and spiral bound, with the title of each raised on foam; hook and loop fasteners were used to adhere the objects and picture cards to pages of the book as needed. The implementation guide includes instructions for adapting books for use with the reading program. Level 1 of the program targets student's engagement with the story. Levels 2 through 5 target progressively higher levels of symbolic understanding when interacting with the text and answering questions about the story. Level 3 was selected for the study. This level addresses the use of objects to respond to comprehension questions throughout the book, answering predictive and summative questions before and after the reading, and locating symbols in the book in addition to engagement (choosing a book, turning pages, and attending to materials).

To answer the question of social validity, the baseline and intervention phases used only the materials included with the package. The books were *Jamaica's Find* (Havill, 1987), *Tar Beach* (Ringgold, 1996), and *EarthDance* (Ryder, 1999). Both SETs requested the books be shortened for the intervention phase. Text the teachers deemed unnecessary was blackened out using a permanent marker. The final shortened text is available from the author upon request.

Dependent Variables

This study examined the impact of *Pathways to Literacy* on engagement, listening comprehension, and communication in shared reading. Independent correct responses on a 23-step TA (Figure 1) were converted into the percentage of steps completed independently. SET perceptions of the appropriateness of the goals, procedures, and outcomes of the reading program were assessed qualitatively using pre- and post-intervention semi-structured interviews.

Design and Procedures

This study used an adapted multiple baseline across participants design (Kennedy, 2005) to answer the question of whether *Pathways to Literacy*, implemented in inclusive preschool classrooms, increased CWD's engagement, listening comprehension, and communication during shared reading. Semi-structured interviews (Merriam, 2009) were used to assess social validity.

Teacher training. SETs received one-on-one training with the researcher in three rounds. First, they were trained on the baseline procedures, which involved following the steps of the TA using non-adapted books and materials. Prior to the intervention phase, they received training on the use of the *Pathways to Literacy* reading program. Before the generalization phase of the study, teachers were taught to adapt two new books following the guidelines included in the implementation guide. For each phase, each step of the TA was reviewed and teachers were asked to demonstrate their ability to complete the steps of the TA with 100% fidelity.

Baseline sessions. In baseline, the books were not adapted, although they were modified to include the repeated storyline as had been done in the books

with *Pathways to Literacy*. Additionally, any materials required for participation (e.g., objects, picture cards) were displayed on the table or tray between the SETs and their students. During baseline, students chose one of books that the SETs read then read to the student and a peer following the steps of the TA (Figure 1). The teachers read the book in an animated fashion, pausing to allow student responding and moving to the next step if there was no response within five seconds. Teachers provided positive verbal feedback for appropriate behavior as they usually would. Presentation of the books was rotated to ensure equal presentation and that each book was read at least once per phase. Given Angela's lack of light perception, tactile symbols (included in *Pathways to Literacy*) were attached to the picture cards in this phase.

The CWD initially participated in three sessions per week during baseline.

Due to participant attrition, Adam was recruited and began his participation after the commencement of the study, which extended the baseline phase. Given the challenging behaviors Mora and Angela began to demonstrate during baseline sessions, weekly probes were introduced after they had each completed in a minimum of five sessions. This reduced the potential for frustration while confirming the consistency of their ability to complete the steps of the TA.

Intervention Sessions. During the intervention, the procedures of the *Pathways to Literacy* reading program were implemented. These included teachers reading adapted books following the steps of the TA and using systematic instruction on engagement, listening comprehension, and communication. Table 1 describes specific adaptations and prompting hierarchies for each CWD.

Table 1

Adaptations Based on Universal Design for Learning and Prompting Hierarchies

Instruction	Mora	Angela	Adam
Strategies for Action and Expression	<ul style="list-style-type: none"> • <i>Big Button</i> voice output device to complete repeated story line • Correct choices included touching or pointing to the correct object 	<ul style="list-style-type: none"> • Page fluffers added for page turning • Correct choices included picking up or handing over card or object • "Touch scan" of objects or picture cards prior to making a choice 	<ul style="list-style-type: none"> • Created a "home" for objects on construction paper using Velcro and pictures • Created "answer sheet" to allow just one response (rather than choosing all objects), with one square to place object or card
Strategies for Representation	<ul style="list-style-type: none"> • Materials presented on black tray near face/eyes • Name card enlarged and her picture attached • Pictures outlined in black 	<ul style="list-style-type: none"> • Braille text added • Tactile symbols added to picture cards • Two objects or picture cards embedded in books 	<ul style="list-style-type: none"> • Social story about appropriate behavior during reading time introduced, read prior to reading sessions

Instruction	Mora	Angela	Adam
	<ul style="list-style-type: none"> • Tactile symbols added to picture cards • Repetitive line spoken in “sing-song” voice 	<ul style="list-style-type: none"> • Choice array presented on divided tray 	
Strategies for Engagement	<ul style="list-style-type: none"> • First/then visual schedule; Mora chose activity to follow reading • Given small toys to mouth. Items removed prior to and returned after each TA step 	<ul style="list-style-type: none"> • Frequent preference assessments to identify reinforcers • Choice to respond to teacher or peer (e.g., hand picture card to peer) 	<ul style="list-style-type: none"> • Token system implemented for independent responses and prosocial behaviors
Prompting Hierarchy: Physical Choices	<ol style="list-style-type: none"> 1) Verbal 2) Gestural 3) Hand-under-hand (HUH) guidance 	<ol style="list-style-type: none"> 1) Verbal 2) Verbal + partial physical 3) Hand-over-hand (HOH) support 	<ol style="list-style-type: none"> 1) Verbal 2) Verbal + gestural 3) HOH support
Prompting Hierarchy: Verbal Responses	<ol style="list-style-type: none"> 1) Show item to be named 2) Full verbal (“say dog”) 3) HUH activation of Big Button 	<ol style="list-style-type: none"> 1) Partial verbal (“say d...”) 2) Full verbal 3) HOH activation of Big Button 	<ol style="list-style-type: none"> 1) Show item to be named 2) Partial verbal 3) Full verbal

Generalization. Generalization commenced when the participant had two or more sessions with over 70% independent responses. During generalization sessions, the structure of the reading interaction remained the same. Due to the length of this phase, each student chose two books from a selection of three books related to the ongoing classroom theme; these two books were alternated, rather than the students making a selection each session. Books chosen from the classroom libraries were adapted based on the guidelines from the implementation guide. To complement the “Spring” theme in their classroom, Mora chose *The Very Hungry Caterpillar* (Carle, 1996) and *Bugs! Bugs! Bugs!* (Barner, 1999) while Adam chose *The Very Hungry*

Caterpillar and *Planting a Rainbow* (Ehlert, 1988). Angela chose *The Very Hungry Caterpillar* and *Bugs! Bugs! Bugs!* from a selection of “Insects”-themed books. Although prompting and reinforcement are not usually used in generalization, the teachers requested they be able to continue to use these strategies as new vocabulary and comprehension questions were introduced in this phase. Only independent responses were recorded.

Social validity interviews. Pre- and post-intervention semi-structured interviews with the SETs were conducted to assess the social validity of the *Pathways to Literacy* adapted shared reading program in inclusive EC classrooms. In these interviews, the SETs were asked to evaluate the program’s methods, including ease of

use and anticipated challenges, along with the goals and outcomes. SETs were also asked how well the program fit with other curricula used in their classrooms and whether they anticipated the program being beneficial for other students. Questions are available from the author upon request. The pre-intervention interview took place during baseline, after the training session and before intervention commenced. The post-intervention interview took place after generalization.

Thematic analysis (Braun & Clarke, 2006) was used to analyze these interviews. In Phase 1, the researcher reviewed transcriptions of the audio recordings and generated preliminary codes related common themes. In Phase 2, the research and a second reviewer analyzed the transcripts separately, highlighting illustrative quotes using the coding scheme. Codes were considered appropriate when both reviewers coded a quote using the same code and did not use different codes for the same quote. When two or more codes had a high level of overlap in the quotes coded for them, codes were collapsed.

Interobserver Agreement (IOA)

The level of agreement between the two coders was calculated by dividing the number of agreements by the total number of steps and multiplying by 100. Prior to the study's commencement, the investigator and secondary coder simultaneously coded video from non-participants to establish 100% IOA. The researcher coded all study sessions and the secondary coder scored 31.5% of the sessions (33.3% of Mora's sessions, 32.1% of Angela's, and 27.8% of Adam's). Whenever a coding discrepancy occurred, the two coders reviewed the video and codes to come to agreement. For the one

session with IOA below 85%, the two coders met to review the video, discuss discrepancies, and clarify codes.

IOA averaged 95.09% across all phases, with a range of 82.61% to 100.00% agreement. IOA was consistent across participants and phases of the study. IOA for Mora averaged 96.14% (range, 86.96% to 100.00%), 93.24% (range, 82.61% to 100.00%) for Angela, and 96.52% (range, 91.20% to 100.00%) for Adam. In baseline IOA averaged 95.11% (range, 86.95% to 100.00%), 93.68% (range, 82.61% to 100.00%) during intervention, and 98.91% (range, 95.65% to 100.00%) in the generalization phase.

Treatment Fidelity

Teachers. To ensure SETs implemented the steps of each phase with fidelity, they were given a step-by-step guide describing teacher actions in the order the steps of the TA appeared for each book. Fidelity was measured for 49.3% of sessions, with 27.8% of these sessions coded by a second coder to establish IOA of fidelity measurement. Fidelity was high and consistent across phases, with total treatment fidelity averaged 98.96% (range, 91.67% to 100.00%). Treatment fidelity averaged 98.17% (range, 91.67% to 100.00%) during baseline, 99.40% (range, 93.55% to 100.00%) during intervention, and 99.40% (range, 95.83% to 100.00%) during generalization. Jamie implemented treatment with 100.00% fidelity across all sessions. Geri implemented treatment with 97.32% fidelity across all sessions (range, 91.67% to 100.00%). IOA for treatment fidelity was high ($M = 99.4\%$; range, 93.5-100%).

Peers. The peers' behavior was measured in order to ensure that the CWD's scores were not unduly influenced by their peers acting as models. SETs asked

the peers to refrain from answering until the preschooler with disabilities had the opportunity to respond. Peers participated “correctly” if they did not respond until after the student with disabilities responded or prompting began. Peer behavior was scored for every session in which treatment fidelity was measured. One session was excluded because the peer responded before the CWD on more than 20% of opportunities. With repeated encouragement from the SETs, peers were able to delay their responses until after the CWDs 96.0% of the time (range, 83.9% to 100%). They were more likely to emit responses prior to the students with disabilities during baseline than during intervention or generalization sessions. During baseline sessions, peers delayed their responses 93.9% of the time (range, 83.9% to 100%), 97.3% of the time (range, 88.0% to 100%) during intervention sessions, and 97.0% of the time (range, 91.7% to 100%) in generalization sessions.

Results

There appeared to be a functional relationship between the introduction of the *Pathways to Literacy* reading program and student engagement in shared reading (Figure 2). Mora’s performance in baseline was relatively low and stable (range, 4.4% to 21.7%; $M = 11.6\%$; $b = 0.62$). When *Pathways to Literacy* was introduced, there was an increase in level (range 13.0% to 78.3%; $M = 55.5\%$) and a positive trend ($b = 3.64$). While the first session after the introduction of the *Pathways to Literacy* reading program was similar to her

performance during baseline, by the second intervention session she was demonstrating improved performance over baseline and her performance never again returned to baseline levels. This improved performance generalized to novel adapted books (range, 54.6% to 81.8%; $M = 63.6\%$, $b = -1.82$).

Angela’s performance during baseline was highly variable (range, 17.4% to 47.8%; $M = 37.3\%$). Despite this variability, there was no apparent trend in the data ($b = 0.33$). Despite frequent absences and continued variability during the intervention phase, Angela displayed an increase in level and a positive trend (range, 47.8% to 78.3%; $M = 64.6\%$; $b = 1.02$) after *Pathways to Literacy* was introduced. Although the first two sessions of intervention demonstrated performance similar to baseline, by the third session there was improved performance which never again dropped to baseline levels. This performance continued in the generalization phase of the study (range, 63.6% to 100%; $M = 76.5\%$, $b = 3.77$), although her final session with 100% of steps completed appears to be an outlier.

Adam’s performance on the TA during baseline was steady with a slight positive trend (range, 34.8% to 52.1%; $M = 43.4\%$; $b = 0.77$). There was an immediate change in level when *Pathways to Literacy* was introduced, with Adam reaching ceiling for responding during intervention (range, 96.7% to 100%; $M = 99.3\%$; $b = 0.34$) and generalization (range, 90.9% to 100%; $M = 96.2\%$; $b = 0.65$).

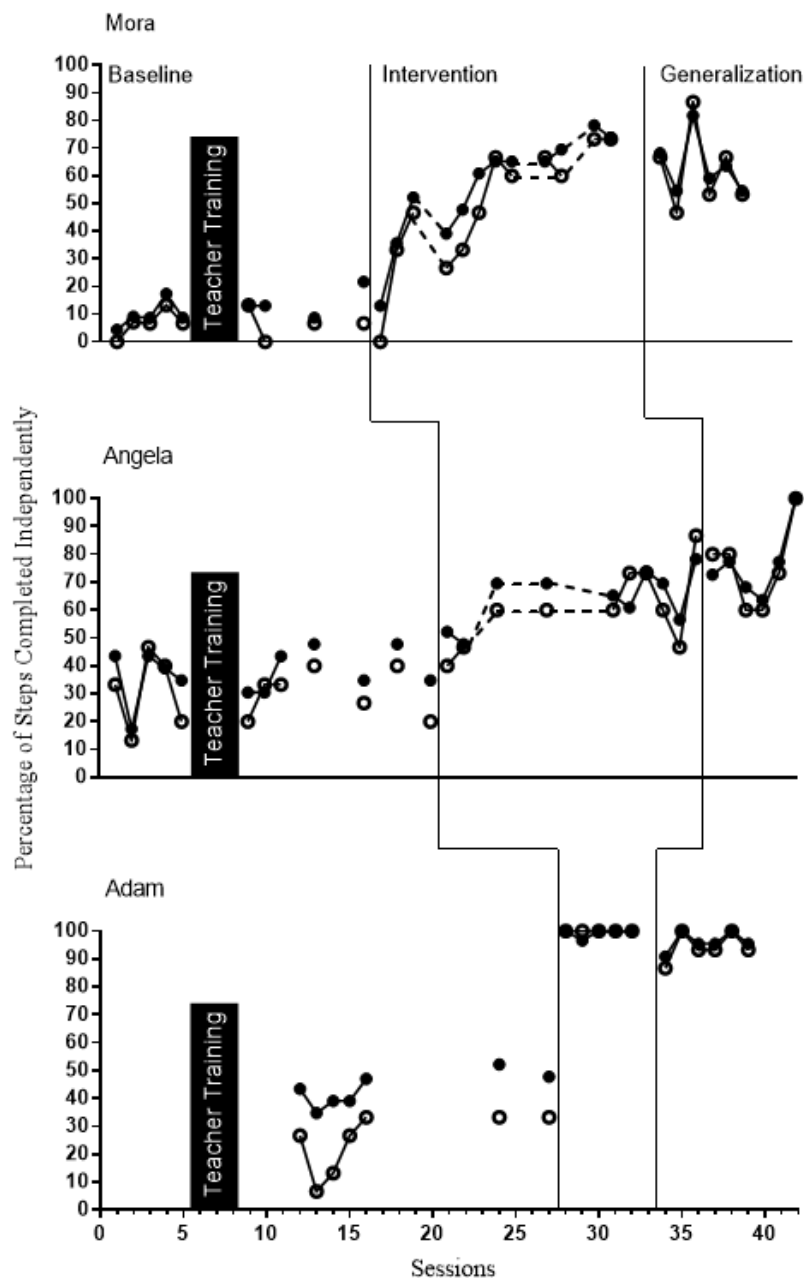


Figure 2. Percent of steps of the task analysis completed independently. Closed circles indicate percent of the total task analysis completed. Closed circles indicate the percent of steps related to listening comprehension and communication completed independently. Dashed lines indicate sessions missed due to absences.

Social Validity

Thematic analysis (Braun & Clark, 2006) was used to identify common themes about the social validity of the reading program when *Pathways to Literacy* in

inclusive preschool classrooms in the pre- and post-intervention interview. Three coding categories emerged, including: (a) *goodness of fit*, which referred to how teachers perceived the reading program to

fit with ongoing instruction in the classroom, including extending upon or complimenting other instructional practices or activities already in use; (b) *suggestions for use*, which included both suggestions regarding the way in which the reading program could be incorporated into typical preschool classrooms and recommendations for changes to the program (e.g., altering the TA, choosing other books); and (c) *plans for continued use*, which included comments suggesting the teachers planned to use the materials after the study (e.g., using the program with other students or planning to paraprofessionals to use the program).

Goodness of fit. Both SETs reported that *Pathways to Literacy* meshed well with other practices used in early childhood special education (ECSE) and in inclusive EC classrooms, as evidenced by their comments about the way in which the reading program might extend or compliment other instructional practices and activities they commonly used. For example, Jamie commented in her pre-intervention interview that she thought, "It will supplement [the ongoing class curriculum, particularly as] so much of what we do...is story based." Meanwhile, Geri commented that "[*Pathways to Literacy*] really compliments the CROWD technique," referencing the strategies used to elicit child talk in dialogic reading (see Zevenbergen & Whitehurst, 2003 for more detail). In particular, both teachers appreciated the systematic nature of *Pathways to Literacy*. Geri commented, "Well, I like that it was systematic, that it gave me a nice way to kind of introduce comprehension," noting her previous challenges with developing strategies to meet Angela's early literacy needs.

Suggestions for use. Both SETs viewed the reading program as a starting point for their instruction rather than a rigid dictum for teachers, despite its scripted nature. After becoming familiar with the program, both had recommendations for changes to the TA and materials so that the program would fit better with the ongoing themes of the classroom and the specific needs of the students. Neither SET felt the books included in the *Pathways to Literacy* materials were appropriate in their classrooms. Jamie summarized both teachers' sentiments when she said, "They're too long for kids this age, even typical children this age...and also... the meanings of the stories are very abstract." Meanwhile, both teachers were able to adapt new books from their classroom libraries for the generalization phase of the study. Although they both indicated that they planned to continue to do so after the study was complete, they expressed a desire to purchase adapted books that fit with their curriculum.

Additionally, the SETs recommended changing the TA to meet the needs of the CWDs. Their planned changes differed based on the CWD's needs; however, they both noted they would remove the step in which students were asked to find their names and match them to the book. Jamie summed up both teachers' view of this step in her post-intervention interview saying, "I think identifying their name is an important skill...but the concept of putting your name on the book doesn't really have any relevance...." Other recommended changes to the TA were based on CWD need. For example, Geri noted that she would not continue to target page turning with Angela as she "felt like that got in the way when I was really trying to get her to comprehend." Jamie, meanwhile, viewed

this as an important target skill for Mora but not for Adam.

Finally, both SETs discussed ways to increase the participation of the peers in the reading sessions, including using them as peer models or addressing the peers' learning needs. In her post-intervention interview, Jamie indicated that she might increase the number of participants and focus on teaching peers how to take turns. Meanwhile, in her post-intervention interview Geri mentioned, "If I have extra copies of the book, I may do more than one copy so we don't have to take turns," and instead would focus on both students' comprehension skills. In a similar vein, both SETs recommended using the program in structured small group times, such as center rotation. While Jamie indicated that she would like to try adapting the program for use during the class's larger circle time in the pre-intervention interview, after intervention she indicated that this may not be practical given the size and demands of the large group and the need to manipulate the materials associated with the reading program. Geri, meanwhile, had originally viewed the program as something that might fit into free choice (e.g., having it available in the classroom library), but after trying to use the reading program near the noisy sensory play area, she recommended finding a more structured setting for its use.

Plans for continued use. The SETs plans for continued use of the reading program were taken as evidence of the social validity of the program. Jamie indicated she planned to continue adapting books for Mora using the guidelines for Level 3 and to introduce Levels 4 and 5 with Adam. She also planned introduce the reading program to other preschoolers she had identified as struggling with listening comprehension or engagement in shared

reading. Geri noted that she planned to use *Pathways to Literacy* during the upcoming summer session and that she would be evaluating her incoming students for the following school year to determine if they would benefit from the program. Geri noted she thought it would be easy to teach other adults to use the program, which would allow her to expand its use to more students. Finally, both teachers discussed the possibility of expanding the use of the reading program to address the needs of preschoolers who were learning English. Jamie noted, "It's good for EL strategies, too.... They don't comprehend [books in English] and they need those concrete objects."

Discussion

This project examined the efficacy and social validity of the *Pathways to Literacy* adapted shared reading program when used in inclusive EC classrooms with preschoolers with significant impairments. It adds to a growing body of research on strategies to support reading comprehension development for students with more significant impairments. In 2006, Browder, Wakeman, Spooner, Ahlgrim-Dezell, and Algozzine compared the literacy strategies used in 128 studies on teaching reading to students with severe intellectual disabilities against the recommendations for literacy instruction from the National Reading Panel (National Institute of Child Health and Human Development, 2000). This analysis revealed that existing research did not adequately address the components of beginning reading instruction, with less than a third of studies examining reading comprehension. Since the publication of this review, more research has been published describing promising strategies to address reading comprehension with this population. In addition to adapted shared

reading, these strategies include strategies to support comprehension of grade-level textbooks for middle-school students with disabilities (Browder, Hudson, & Wood, 2013) and using shared reading to support inclusion in high-school classrooms (Ruppar, Afacan, Yang, & Pickett, 2017). It has also involved the development of strategies to adapt the literacy environment for students with disabilities in early elementary (Stone, Rivera, & Weiss, 2016) and high school (Apitz, Ruppar, Roessler, & Pickett, 2017). Despite the importance of shared reading in early childhood, however, little additional research has been conducted on the use of adapted shared reading in preschool classrooms.

This study indicates that adapted shared reading can be an effective strategy in early childhood. Prior to the introduction of the reading program, the CWD participated in shared reading interactions inconsistently. When *Pathways to Literacy* was introduced, the CWD demonstrated an increase the independent completion of the steps of the TA. Importantly, these skills generalized to novel adapted books, despite the fact that these books included new language and concepts. This suggests that the systematic prompting used during the intervention phase taught the CWD how to participate in adapted shared reading lessons. Furthermore, despite some recommendations for modifications to the program, the SETs appeared to find that the goals, procedures, and outcomes of the reading program generally aligned with recommended practices for ECSE, suggesting the program is socially valid (Leko, 2014). Semi-structured interviews revealed the SETs felt *Pathways to Literacy* met an important need in their programs. Both indicated they had been searching for approaches to shared reading that were

appropriate for their preschoolers with significant learning needs as they struggled to include these students in shared reading experiences.

Limitations

There were two issues with the study design that raise questions about the findings. These include standardization of the baseline conditions and procedures for evaluating social validity. Several features of the baseline condition were less than ideal. The first issue was the introduction of probes, due to the extension of this phase as a new participant was recruited. This decision was made as the first two students were beginning to demonstrate challenging behavior during their sessions; in Mora's case, this included self-injurious behavior possibly due to frustration with the activities. However, it is possible that the switch to using probes obscured variations in their rates of responding that would influence the interpretation of the results. This issue is particularly of concern due to the fact that the location for Angela's baseline sessions was changed in addition to the ongoing variability in her responding. Future research should aim to standardize the baseline conditions to address this limitation.

Additionally, despite the favorable impressions reported by the SETs, there remain questions about the social validity of the adapted shared reading program. Because the investigator conducted the interview, it is possible that the SETs held back their negative feedback. Additionally, this study did not use general education teachers as participants. Because SETs and general education teachers (GETs) often have different views on the appropriate goals, methods, and outcomes of their instruction (Cochran-Smith & Dudley-Marling, 2012), it is possible that GETs

would be uncomfortable with the systematic nature of the program. The different classroom roles held by SETs in this study (co-teacher vs itinerant teacher) could influence their impressions of the program. To address these concerns, future research should employ an interviewer who was not involved with program implementation to examine the impact of different models of inclusive practice in EC and GET input on the adoption and implementation of an adapted shared reading program.

Recommendations and Future Directions

While the SETs agreed that the goals, procedures, and effects of *Pathways to Literacy* were appropriate for their classrooms, they did have recommendations for changes. These changes, which may make the reading program more appropriate for all students and align the program with the norms of preschool culture, point to avenues for future research.

Book selection. The use of adapted shared reading with books based on the classroom theme or on the students' interests warrants further investigation. Both SETs indicated displeasure with the books included in the program. This led to the decision to simplify the language of the books between baseline and intervention, which leaves open the possibility that the intervention's success was related to the reduction in text, rather than the reading package. It is also possible that the CWD would have responded differently during baseline if this phase included books typically read in preschool classrooms, particularly as thematic units may support vocabulary development across activities. It should be noted that the books used for generalization were related to the ongoing classroom themes, which may explain in

part why the students were able to generalize skills to the new books so quickly.

This issue of book selection is possibly more complicated than it appears. There is little guidance available in selecting books for shared reading (Shanahan, 2014). Existing frameworks for matching students to texts (such as Lexile® scores [MetaMetrics, 2014]) identify appropriate texts for *independent* reading. Because shared reading does not require mastery of decoding, the main question becomes whether the stories, heard aloud, will be accessible to students. Considering many preschools base their units around instructional themes, any text – regardless of text complexity – would likely feel inappropriate if not linked to the classroom theme. Furthermore, the benefits of shared reading on language development are derived not from the simple act of reading aloud to a child but from the intentional use of shared reading as a context for language development. It would seem, therefore, that the driving factor in choosing books for shared reading should be how well a teacher can use it to support the targeted skills, and area that needs more research to guide teachers' book selection for shared reading to meet their needs.

Goal identification. Both SETs appreciated the systematic nature of the reading program, but planned to change the TA based on the needs of the CWD. While both teachers planned to continue to emphasize comprehension during shared reading, Geri did not plan to continue to focus on engagement (e.g., page turning) with Angela. Jamie, meanwhile, thought these steps beneficial for Mora. These disparities illustrate the way in which other teachers may want to approach the TA as a guide rather than a strict script for shared

reading interactions. Future studies should investigate how to select appropriate shared reading goals and how teachers may address different goals with different students within the same reading session.

Peer selection and the inclusive environment. Peer selection differed across classrooms based on teacher preference. The CWD selected their peers in Jamie's classroom while peers were selected from a list of volunteers in Geri's. These decisions point to differences in orientations toward student choice and autonomy in each class. Such differences could result in different outcomes for the students; the design of the study does not allow for an analysis of the possible impact of this difference on student outcomes. Additionally, although the current study examined the use of *Pathways to Literacy* in inclusive preschool classrooms, the study design required the peer not participate until after the CWD had responded. Future research should examine ways teachers can incorporate the peer into the shared reading lesson, either as a model or to receive instruction specific to his or her needs alongside the CWD.

Multilingual development and literacy. Finally, it should be noted that two

of the three students included in this study were English language learners. While all instruction and related services were provided in English at school, with incidental translation from school staff when available, both Mora and Angela were exposed to different languages at home. Although there is significant overlap between the recommendations for supporting emergent bilinguals' participation in shared reading and the strategies used in *Pathways to Literacy* (Correa, Lo, Godfrey-Hurrell, Swart, & Baker, 2015), this may have influenced their response to intervention. Future studies should examine the impact of English learner status on the effectiveness of adapted shared reading.

Despite the limitations of this research, adapted shared reading appears to address a major need found in inclusive early childhood classrooms. With its attention to individualization, the *Pathways to Literacy* reading program addresses critical emergent literacy skills while targeting oral language development, thus preparing students with significant disabilities for the next level of literacy instruction as they enter kindergarten.

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